In this thesis we discuss drawbacks of the event horizon which is defined globally in spacetime and we introduce a quasilocal definition of black hole boundary foliated by marginally trapped surfaces on which the expansion of the outer null normal congruence becomes zero. List of different types of quasilocal horizons follows, i.e. apparent horizon, trapping horizon and isolated and dynamical horizon. Subsequently we calculate and analyse quasilocal horizons in two dynamical spacetimes which are used as inhomogeneous cosmological models. We discover future and past horizon in spherically symmetric Lemaître spacetime and we come to conclusion that both are null and have locally the same geometry as the horizons in the LTB spacetime. Then we study Szekeres-Szafron spacetime with no symmetries, particularly its subfamily with $\beta_{,z} \neq 0$, and we derive the equation of the horizon. However, because of the lack of symmetries the spacetime is not adapted to double-null foliation, therefore we were unsuccessful in our attempts to estimate the equation´s solution. Only in a special case when the function Φ does not depend on the coordinate z we found a condition on the existence of the horizon, that is $\frac{\Phi_{,t}}{\Phi} > 0$.